

Use of C-BML in French-German Coupling Experiments

NMSG-079 C-BML Workshop 2010, Farnborough, UK

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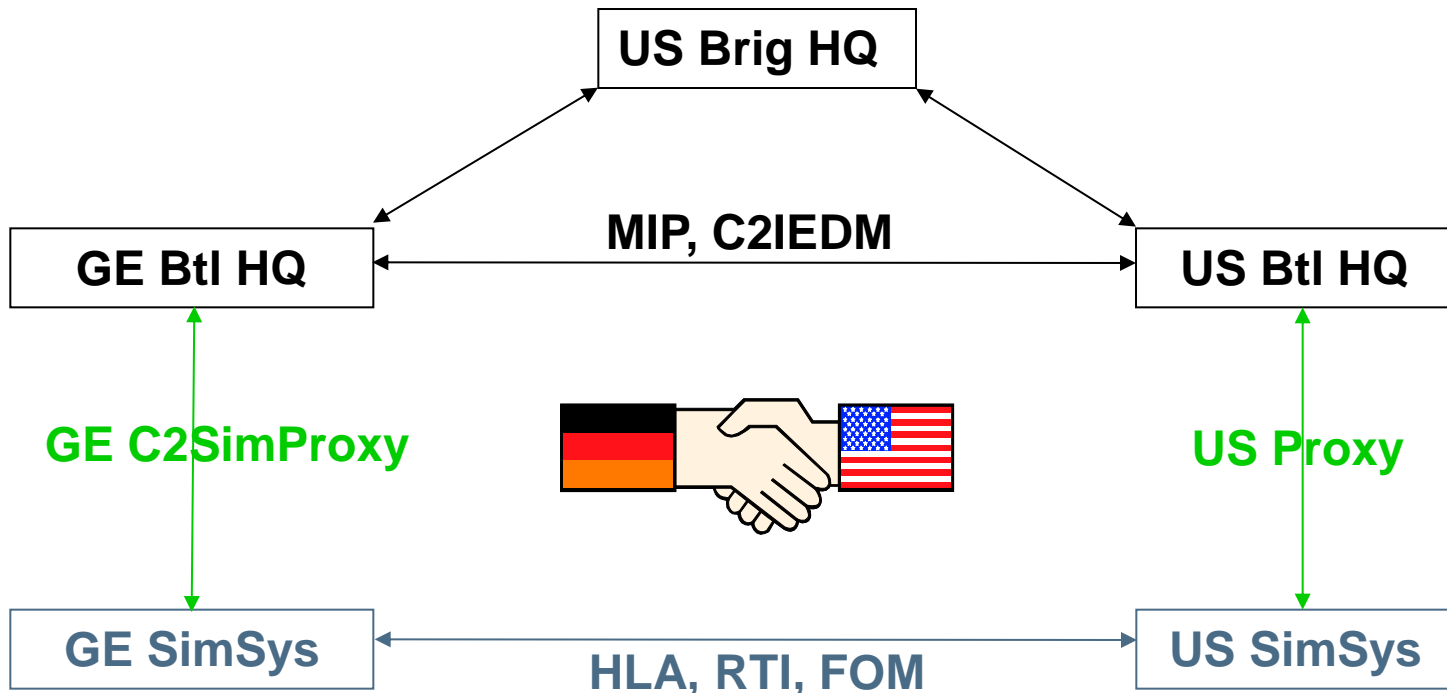
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Some history...

- experience with C2-Sim coupling gained from SINCE
 - SINCE: *Simulation and C2 Information System Connectivity Experiment*
 - bilateral US-GE project (2003 to 2007)
 - combined planning processes at the level brigade/battalion
 - aim: achieve *Common Operational Picture* (COP) in all involved systems



Requirements on the GE side

- construct a *C2SimProxy*
 - support basic *Information Exchange Requirements*
 1. Initialization: from C2-Sys to SimSys
 - ORBAT, deployment, consumables, control features ...
 2. Orders: from C2-Sys to SimSys
 - March, Attack, Defend ...
 3. Reports: from SimSys to C2-Sys
 - own situation (SitRep), enemy observations (SPOTrep)
 - use established communication standards of both domains
 - simulation systems: HLA, RPR FOM
 - C2-systems: MIP DEM, C2IEDM
- ⇒ the C2SimProxy should use HLA & MIP
- obviously, *BML was not known enough or not trusted in at that time!*

Lessons learned from SINCE (GE perspective)

- MIP:
 - orders are not well modeled in C2IEDM
- HLA:
 - orders and reports are not modeled in RPR FOM \Rightarrow extensions
 - HLA-interfaces of simulations need modifications
- C2SimProxy:
 - changes within C2- or SimSys domain require modification
- consequence: multiple modeling of orders and reports
 1. in C2-systems
 2. ~~in C2IEDM~~
 3. ~~in C2SimProxy~~
 4. ~~in HLA FOM~~
 5. in SimSys

use BML instead!

Outline of French-German experimentation

■ aims:

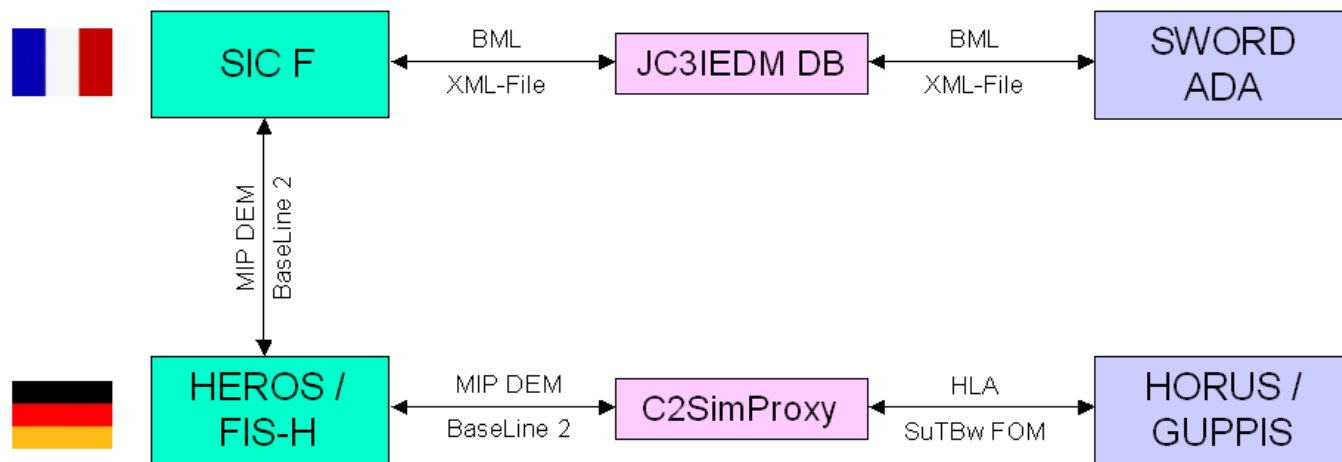
1. support coupling of C2-Sys with SimSys
 - e.g. planning of operations
 - e.g. decision support
 - e.g. staff exercises
2. support bi-national activities
 - e.g. French-German Brigade

■ roadmap:

- continue main ideas of SINCE
 - close coupling of systems of both nations
- perform a series of experiments with increasing technical complexity
 - use BML for orders
 - use BML for orders and reports
 - use MIP for exchange of complete situations

French-German experimentation in 2008

- established contacts with COMELEC
 - COMELEC: *Commission Electronique et Optronique*
- FRA participated in SINCE experiments
 - in 2006 and 2007
- in 2008, dedicated DEU-FRA experiments started



Conclusions from experimentation in 2008

1. initialization of all systems works with MIP – HLA – BML
2. rigid rules in MIP not always suited for coupling with simulations
example: new plan requires deletion of units
3. no unique definition of orders in C2IEDM
caused problems with C2-systems
4. GE C2SimProxy requires HLA and MIP – 2 non-trivial coupling concepts
5. use instead **BML for coupling**

Current French-German experimentation

- continuation of experiments in 2009/2010

- general remarks:

1. use C-BML for national and bi-national coupling of C2- and SimSys
2. MIP-connection of C2-system well established – no experimentation
3. no direct coupling of SimSys via HLA (fair fight problems!)
4. use tools from MSG-048, e.g. JC3IEDM-based web-service from GMU

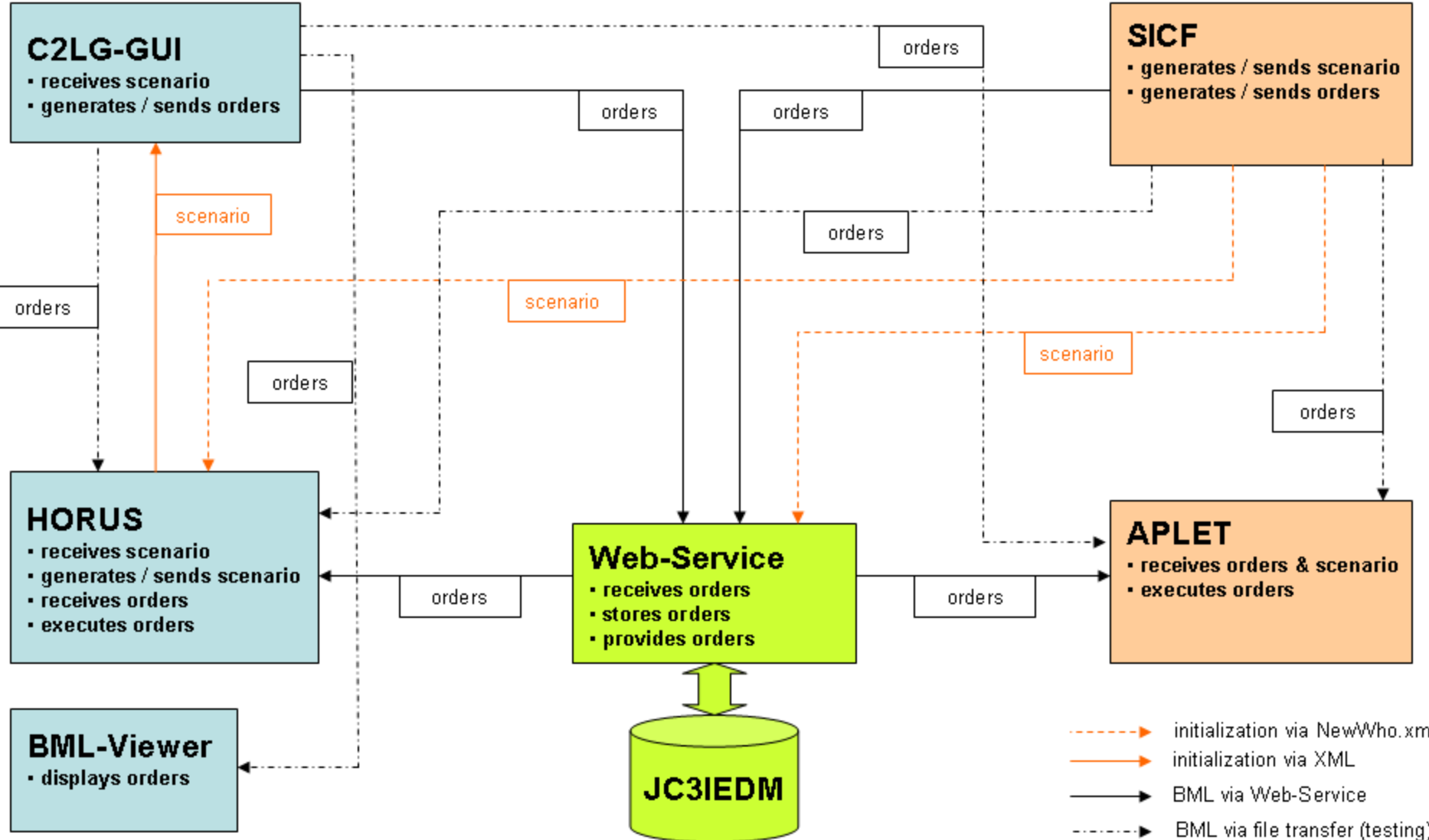
- outline of first experiment:

1. define initial situation in C2-systems
2. exchange initial situation with XML-files, e.g. *NewWho.xml*
3. first experiment: transfer and execution of orders



DEU-FRA-Experiment 1

DGA Arcueil, 28.09.-02.10.2009



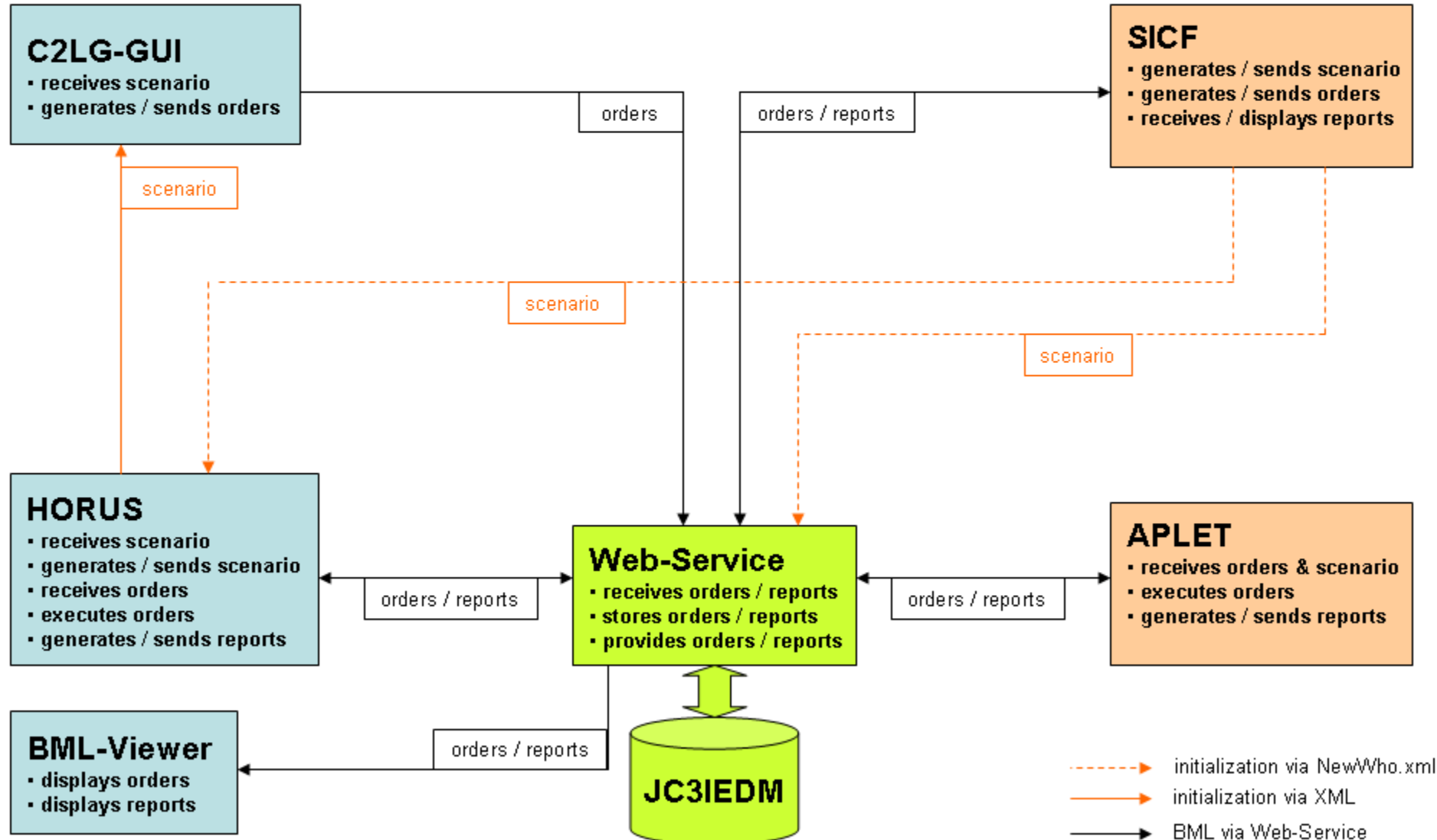
Current French-German experimentation – experiment 2

- same configuration as for experiment 1
- drop BML via file transfer
- reports added



DEU-FRA-Experiment 2

IABG Meppen, 16.12.-19.12.2009



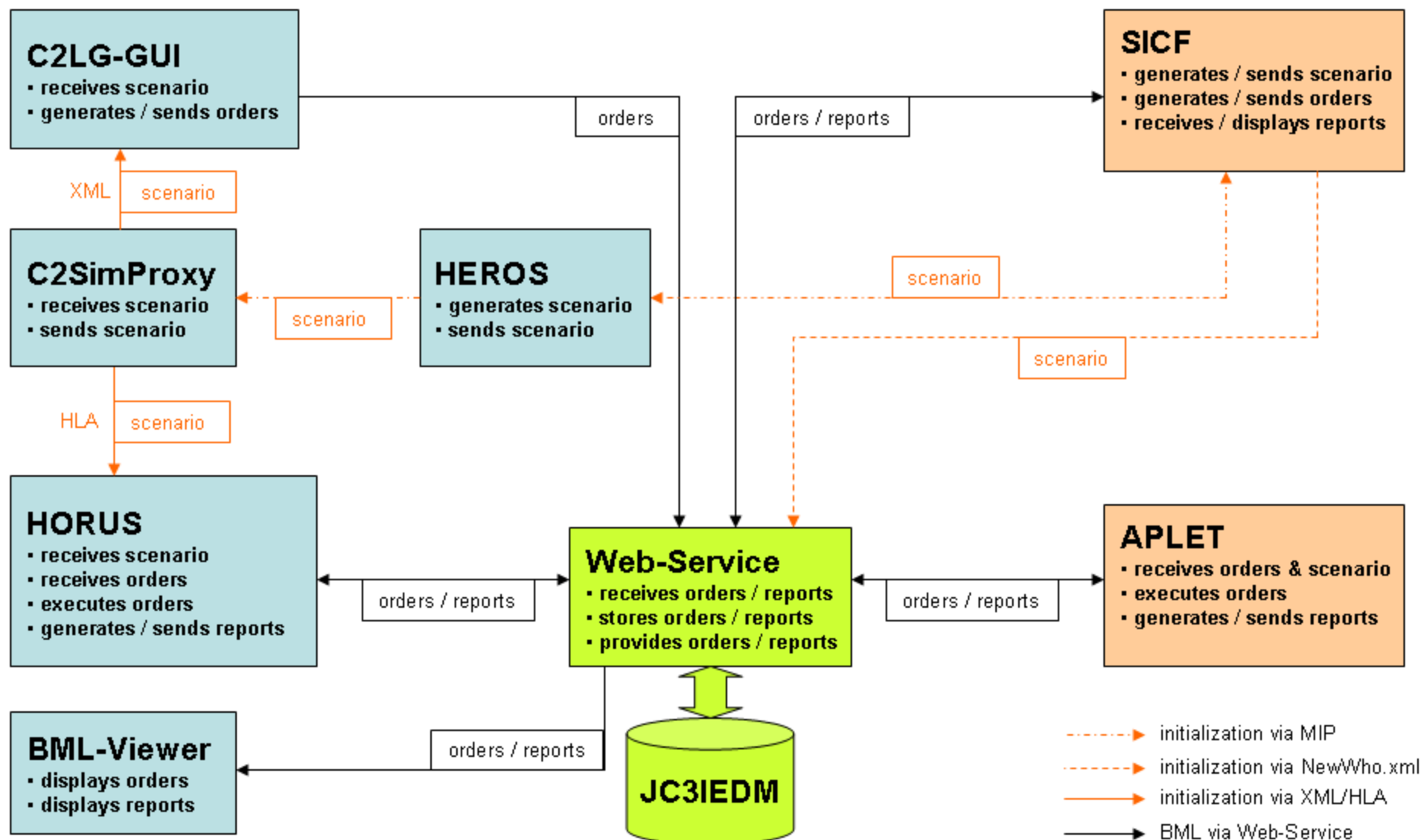
Current French-German experimentation – experiment 3

- bugs fixed
- added for demonstration:
 - DEU C2-system HEROS
 - MIP-HLA-gateway C2SimProxy
- exchange of initial situation via MIP DEM (done in advance)

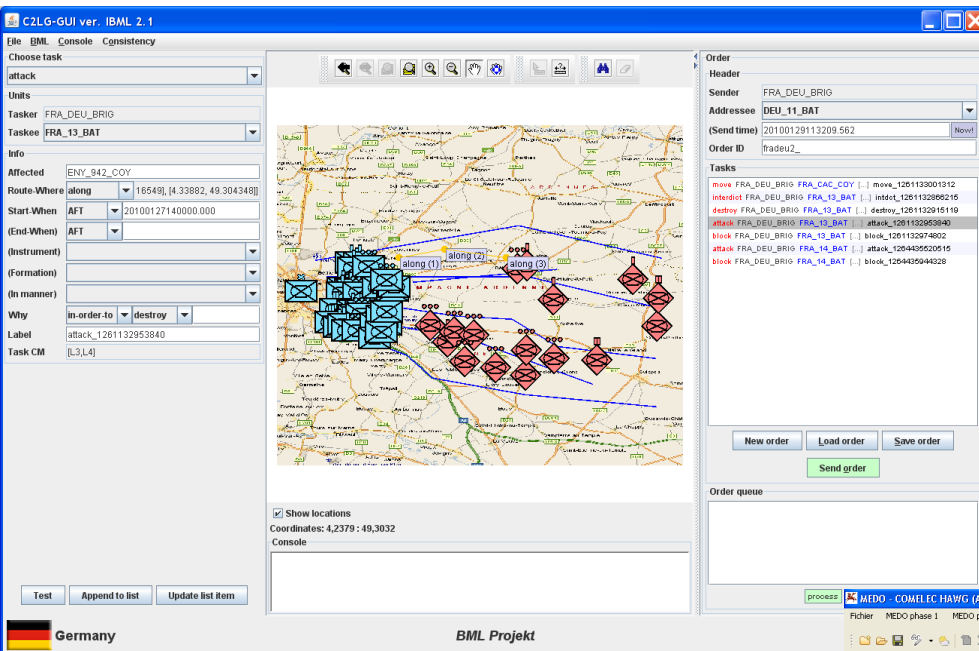


DEU-FRA-Experiment 3

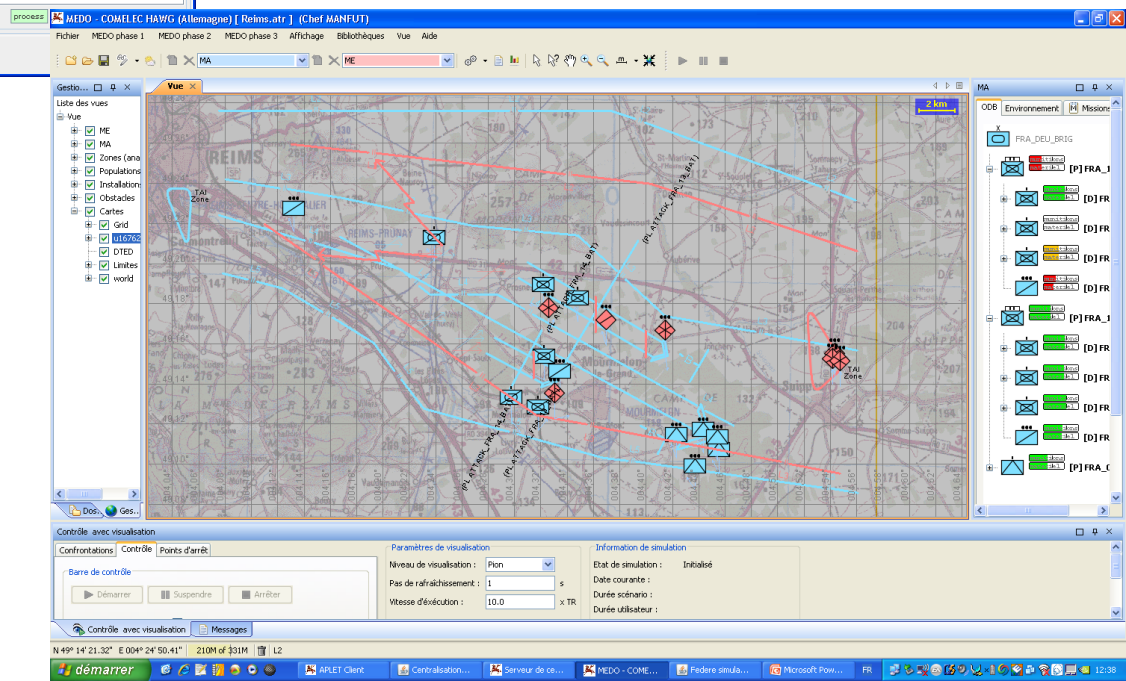
IABG Ottobrunn, 27.01.-29.01.2010



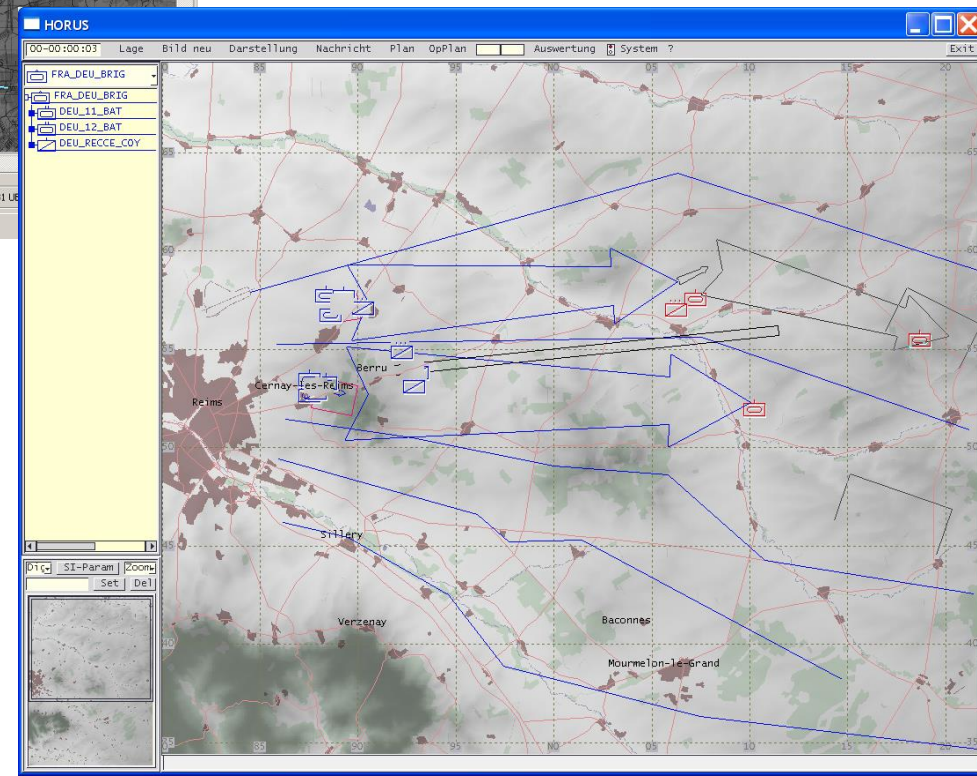
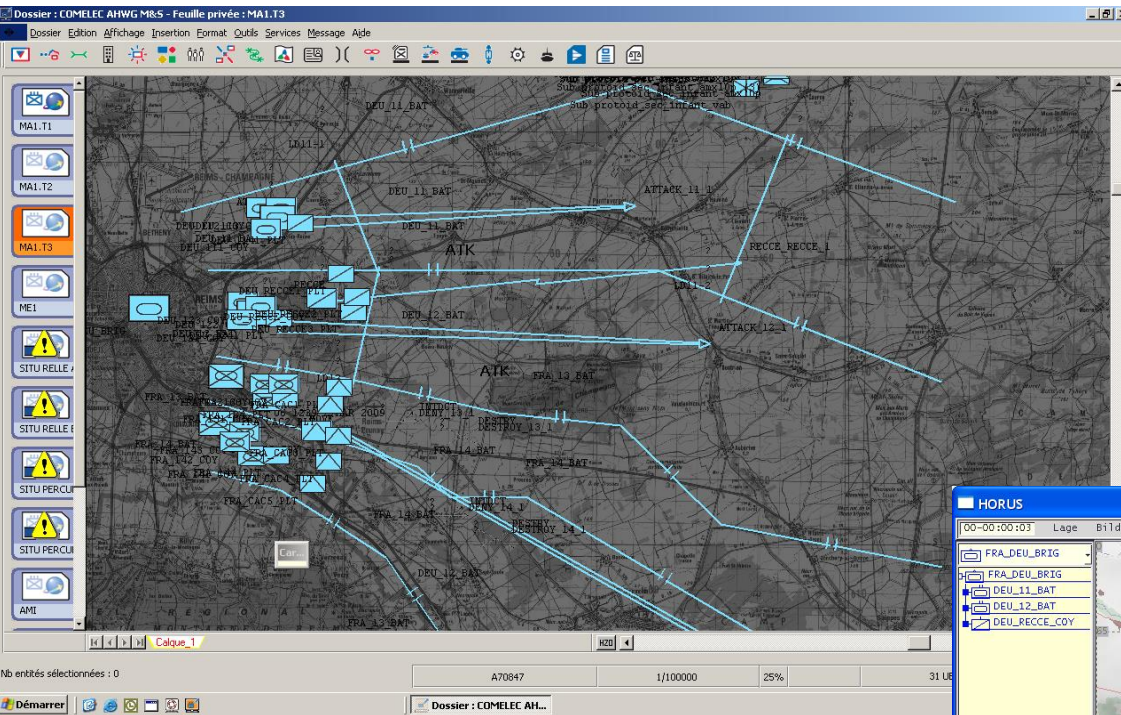
Screenshots: C2LG-GUI (DEU) and APLET (FRA)



orders are defined with C2LG-GUI ...
... and are executed by APLET



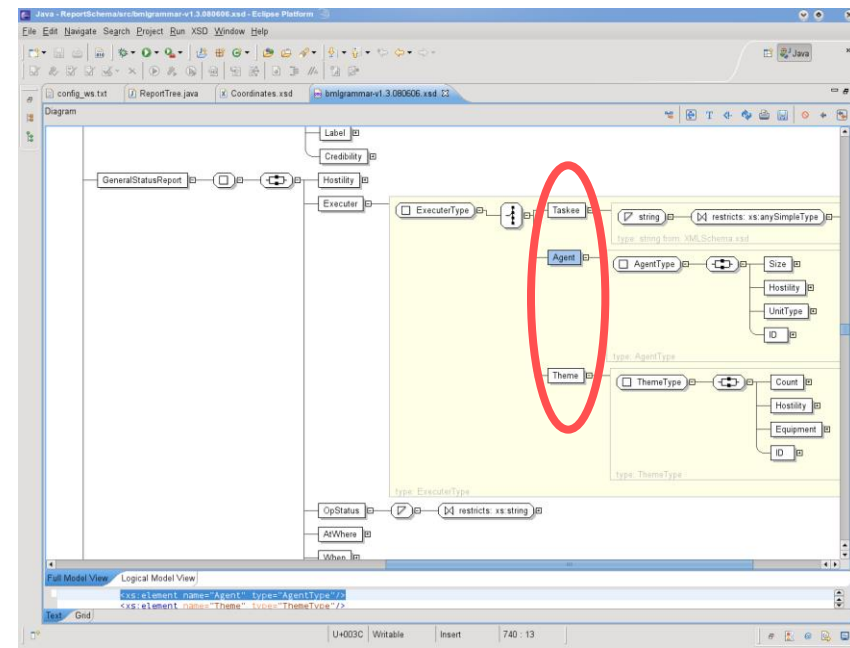
Screenshots: SICF (FRA) and HORUS (DEU)



orders are defined with SICF ...
... and are executed by HORUS

Some results from the experiments

1. good:
central web-service allows “observation” of activities of the other nation
2. debatable:
SimSys need hierarchy of units – is missing in *NewWho.xml*
 - but: NewWho was not designed for initializing SimSys
3. not so good:
reports are usually sent to somebody –
but *Header* with *Addressee*
was deactivated in SBML
4. not so good:
enemy observations don't have
always full identification –
but *Agent* and *Theme* were
deactivated in SBML



Remark concerning *orders*

- different approaches used by DEU and FRA
- DEU orders
 - require initialization of SimSys before execution (ORBATs, control features)
 - order is short (task assignments in “5W”-style)
 - permanent polling for new orders necessary
- FRA orders / plans
 - no initialization of SimSys needed
 - order is long (task assignments, own and enemy ORBAT, control features)
 - no further polling after receipt of order
- but: after some adaptations,
exchange and execution of orders worked in all directions
 - DEU → DEU
 - FRA → FRA
 - DEU → FRA
 - FRA → DEU

General conclusions

- coupling of C2-Sys and SimSys is still a tricky business

but

- C-BML is extremely helpful
- easier to implement than MIP **and** HLA
- French-German co-operation worked very well
- minor improvements necessary for SBML / web-service
- proposal: **direct use of BML** (storage and exchange of complete BML-messages)

Planned continuation in 2010

- get potential users more involved
- scenario: *Counter Insurgency Operation* in Afghanistan
- DEU simulation: use KORA (in use at the army training center Wildflecken)
- DEU C2-system: use HEROS with prototypical BML-interface
- think about a *Direct Push* mechanism for orders
 - orders should be pushed immediately to the right simulation system
 - workflow manager on top of SBML-server?
 - has to know: “who is simulating what”
- demonstration to FRA & DEU officers in October/November 2010

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